

A NEW *PLATYDORIS* (GASTROPODA; NUDIBRANCHIA) FROM THE GALÁPAGOS ISLANDS

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ABSTRACT.—*Platydoris carolynae* n. sp. is described from the Galápagos Islands and compared with the two eastern Pacific species of *Platydoris* and with *P. scabra*, the only member of this genus with wide distributional limits. Platydorids are rasping sponge feeders that live in tropical and temperate oceans. The distribution and nomenclature of the 36 known species is reviewed briefly.

The nudibranch fauna of the Galápagos Islands has been neglected by previous workers. Apparently, only two species, *Doris peruviana* Orbigny 1837 and *Onchidium lesliei* Stearns 1893, have been reported (Pilsbry and Vanatta, 1902: 556; Stearns, 1893: 383). Yet, in March 1971 members of the Ameripagos Expedition to the Galápagos Islands collected at least 15 species of nudibranchs, some of them fairly common, at various localities in the islands (Sphon and Mulliner, 1972). Included among these was a previously undescribed species of *Platydoris* that was found at several localities, and which may be endemic to these islands. In this paper, we describe this new species, and briefly review the distribution and nomenclature of *Platydoris*.

BIOGEOGRAPHY

Members of the genus *Platydoris* are sluggish, retiring invertebrates that cling tightly to crevices on the underside of rocks and coral heads. They are found in tropical and temperate waters from 40° N latitude to 32° S latitude. All but one of the thirty-six known species have limited ranges, usually consisting of one shoreline, one island chain, or one location (Fig. 1). *Platydoris scabra* (Cuvier, 1804) is the exception, ranging in tropical waters from 38° E longitude to 155° W longitude.

The majority of the platydorids are found in the Indo-Pacific. They are rasping sponge-feeders, and the great abundance and diversity of sponges may account for the large number of platydorids found in these seas as compared to the Atlantic or Eastern Pacific.

SYSTEMATICS

Order Nudibranchia

Family Dorididae

Genus *Platydoris* Bergh, 1877

Definition.—The body is leathery, flattened, and oval with a coarse to smoothly granular mantle. The foot is notched anteriorly. The branchial aperture is oval and six-lobed. There is no labial armature, and the radula consists of numerous hamate teeth. The stomach is large; the penis is armed with small spines, and the vagina has a thick cuticular lining (translated and modified after Bergh, 1877).

Type species.—*Platydoris argo* (Linnaeus, 1758), by original designation.

Platydoris carolynae n. sp.

Type locality.—Docking area, Charles Darwin Research Station, Santa Cruz Island, Galápagos Islands, Ecuador, (0° 45' 05" S, 90° 15' 38" W).

Description.—The ground color of the animal is cream, the entire dorsum mottled with black or brown blotches. The ventral side of the mantle is also cream with black or brown spotting, each spot made up of multiple fine cross-hatched lines. The rhinophores are tan-colored with dark brown spots. The branchiae are translucent with dark brown or



Figure 1. Distributional records for *Platydoris scabra* are indicated by the solid dots. Numerals represent the number of *Platydoris* species found at each locality.

black specks (Fig. 2).

The rhinophores are perfoliate with twenty-four leaves. They are completely retractable and set in a rhinophoral pit with a seven-lobed margin. The branchiae are completely retractable, tripinnate, six in number and divided into two groups of three. The anterior end of the branchial opening forms a crenulate lobule. The pharynx extends for approximately half the distance from the anterior end of the foot to the edge of the dorsum.

Two small head tentacles are attached to the head between the mantle and the body. No eyespots are visible. The foot is bilabiate anteriorly to just behind the foot corner, notched medially. The radula is approximately heart-shaped with 76 longitudinal rows of hamate teeth. No rachidian teeth are present. The radula formula is $76 \times 70.0.70$ (Figs. 3, 4). In the reproductive system the spermatocyst is elongated, connecting directly into the mucus and albumen gland. A short convoluted tube connects to the oval spermatheca. The prostate is large and globular. The penis is armed with erect, slightly curved spines. The vagina is lined with thick cuticle-bearing folds (Fig. 5).

Etymology.—This species is named for Carolyn Stover, a member of the Ameripagos Expedition.

Type material.—Holotype, California Academy of Sciences, Invertebrate Zoology Type Series No. 303. Photographs of the living animal are deposited in the CASIZ slide collection as Nos. 153-155. The specimen, which is 46.4 mm long and 32.5 mm wide was collected by Andre DeRoy on 13 February 1964, intertidally at the Charles Darwin Research Station dock.

Paratypes (7).—One specimen deposited at the Charles Darwin Research Station, collected intertidally in shallow pools on Santa Cruz Island. One specimen deposited at the Los Angeles County Museum of Natural History, Invertebrate Zoology, Type Collection No. 1619, collected intertidally at Duncan Island, by the Ameripagos Expedition on 26 March 1971. Two specimens deposited at the San Diego Natural History Museum, Department of Marine Invertebrates: SDSNH No. 62826, collected from 10m at Jervis Island by the Ameripagos Expedition on 24 March 1971; Radula slide and dissected animal SDSNH No. 62827, collected from 6m off Punta Alfaro, Isabella Island, by the Ameripagos Expedition on 25 March 1971. One specimen deposited at the American Museum of Natural History, Department of Living Invertebrates, AMNH No. 173729, collected from 10m, off Jervis Island, by the Ameripagos Expedition on 24 March 1971. One specimen deposited at the United States National Museum of Natural History, type Collection No. 735349, collected from 6m off Punta Alfaro, Isabella Island, by the Ameripagos Expedition on 26 March 1971. One specimen deposited at the Delaware Museum of Natural History, No. 64524, collected at Long Beach on the northern coast of Santa Cruz Island by Sue Andrews on 21 December 1972. The paratypes range in size from 19.5 mm long and 14.2 mm wide to 42.3 mm long and 28.0 mm wide.

Discussion.—The only species of *Platydoris* known from the eastern Pacific are *P. macfarlandi* Hanna, 1951, and *P. punctatella* Bergh, 1898. The three species are separ-

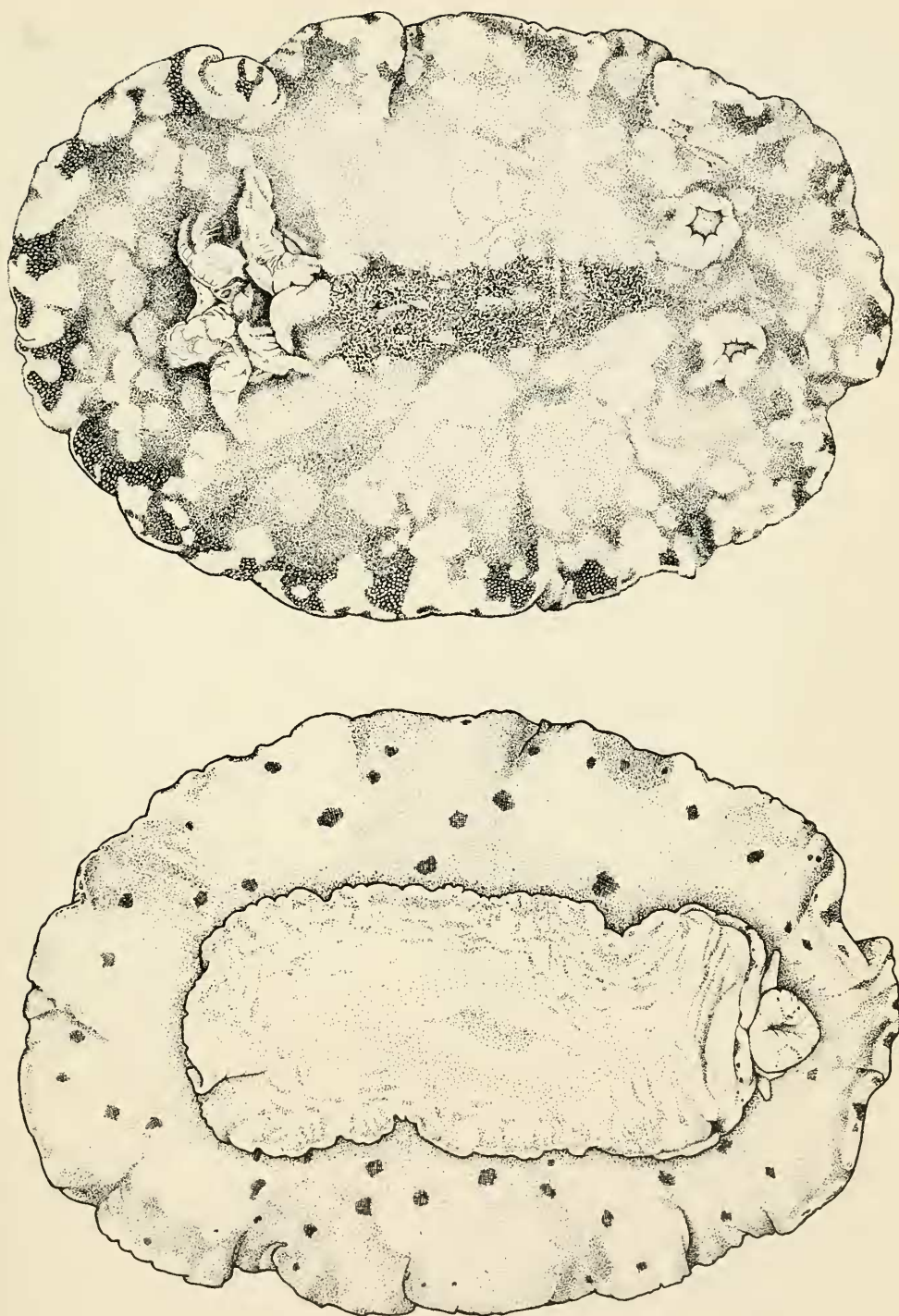


Figure 2. *Platydoris carolynae*, dorsal (top) and ventral (bottom) views.

able by external appearance and geographical range. *Platydoris macfarlandi* is known only from the type lot of four specimens dredged from 172m off Pismo Beach, San Luis Obispo County, California. It is dark red, velvety smooth, with no spots or markings on the surface. The foot tapers to a point posteriorly. *Platydoris punctatella* is from "Isla de Pajargo", Chile (?=Isla de Pajaros, Chile, ca. 26° S. lat.). It is pale yellow. The rhinophores and the anterior margin of the foot are bright yellow. The back has a few scattered

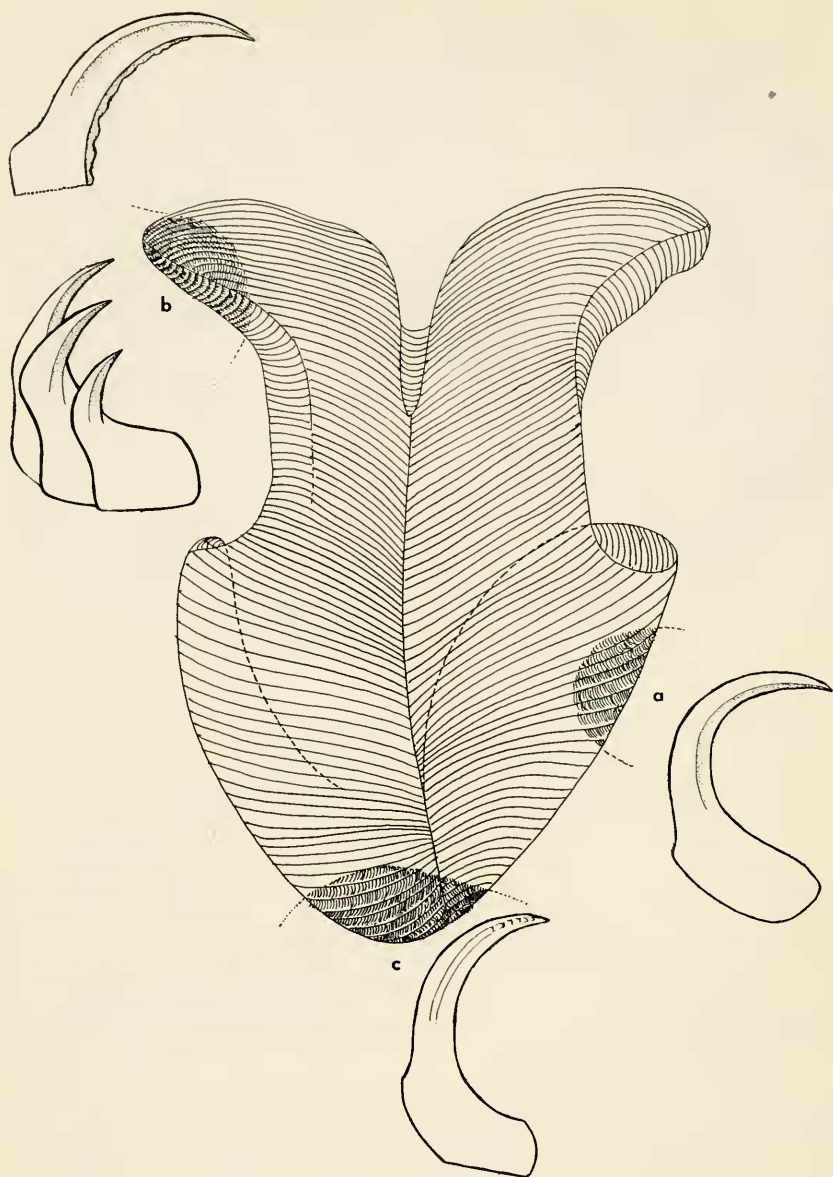


Figure 3. Radula with offset drawings of individual teeth.

light brown spots and flecks. The underside of the mantle is smooth and faint yellow with no markings.

Platydorís carolynae is known only from the Galápagos Islands. The foot is round posteriorly in contrast to *P. macfarlandi*. The color is cream or white with brown or black mottling on the dorsum. Each of the spots on the ventral side of the mantle is made up of fine cross-hatched lines. *Platydorís punctatella* has no ventral markings.

Internal differences were noted in *P. carolynae*. The radula formula is $76 \times 70.0.70$ for a 46 mm animal, whereas the radula of a 50 mm *P. scabra* is less elongated, $49 \times 103.0.103$. The vas deferens in *P. scabra* is long and coiled, whereas it is short and straight in *P. carolynae*.

THE SPECIES OF *PLATYDORIS*

We have been able to find 46 specific names described as, or later assigned to *Platy-*

doris in the literature. Of these, one (*P. variolata*) has been shifted to *Anisodoris*; eight are currently considered synonyms; and two are *nomina nuda*. The remaining names are listed alphabetically in Table 1. Synonyms are cited chronologically under the currently accepted name. We have also indicated the distribution of each species and have added the two *nomina nuda* at the end of the list, as they both appear to be undescribed species.

TABLE 1. Currently recognized species of *Platydoris* and their distributions.

SPECIES	DISTRIBUTION
<i>P. angustipes</i> (Mörch, 1863)	Southern Florida, through Caribbean, and south to Bahía, Brazil.
Synonyms:	
<i>P. angustipes alaleta</i> (Bergh, 1877a)	
<i>P. rubra</i> White, 1952	
<i>P. argo</i> (Linnaeus, 1767) (Type species of the genus)	Mediterranean Sea. Also, a questionable report from the East Indies.
<i>P. canariensis</i> (Orbigny, 1839)	Canary Islands.
<i>P. capricornensis</i> Allan, 1932	Capricorn Group, Queensland, Australia.
<i>P. carinata</i> Risbec, 1928	New Caledonia.
<i>P. cruenta</i> (Quoy and Gaimard, 1832)	Western Pacific, Japan, Philippine Islands, and East Indies.
Synonym:	
<i>P. arrogans</i> Bergh, 1877a	
<i>P. dura</i> Pruvot-Fol, 1951	Mediterranean Sea.
<i>P. ellioti</i> (Alder and Hancock, 1864)	Indian Ocean and southeast coast of India.
<i>P. flammulata</i> Bergh, 1905	East Indies.
<i>P. formosa</i> (Alder and Hancock, 1864)	Eastern Indian Ocean; also, reported from Hawaii.
<i>P. galbanus</i> Burn, 1958	Southern Australia.
<i>P. hepatica</i> (Abraham, 1877)	Riciniola ¹ (Pacific Ocean).
<i>P. herdmani</i> Farran, 1905	Ceylon.
<i>P. immonda</i> Risbec, 1928	New Caledonia.
<i>P. incerta</i> Eliot, 1904	Zanzibar.
<i>P. inframaculata</i> (Abraham, 1877)	Ceylon and East Indies.
<i>P. infrapicta</i> (Smith, 1884)	Queensland, Australia.
<i>P. laminea</i> Risbec, 1928	New Caledonia.
<i>P. macfarlandi</i> Hanna, 1951	Central California.
<i>P. murrea</i> (Abraham, 1877)	Mauritius, Indian Ocean.
<i>P. noumeae</i> Risbec, 1928	New Caledonia.
<i>P. papillata</i> Eliot, 1904	Eastern Africa.
<i>P. philippi</i> Bergh, 1877a	Mediterranean Sea.
<i>P. pulchra</i> Eliot, 1904	Eastern Africa.
<i>P. punctata</i> (Orbigny, 1839)	Canary Islands.
<i>P. punctatella</i> Bergh, 1898	Isla de Pajaros, Chile.
<i>P. sanguinea</i> Bergh, 1905	East Indies.
<i>P. scabra</i> (Cuvier, 1804)	Indian and western Pacific Oceans.
Synonyms:	
<i>P. coelestis</i> (Kelaart, 1858)	
<i>P. eurychlamys</i> Bergh, 1877a	
<i>P. coriacea</i> (Abraham, 1877)	
<i>P. vicina</i> Bergh, 1880	
<i>P. iredalei</i> Allan, 1932	
<i>P. sordida</i> (Quoy and Gaimard, 1832)	Mauritius, Indian Ocean.
<i>P. speciosa</i> (Abraham, 1877)	Western Pacific Ocean.
<i>P. spinulosa</i> Farran, 1905	Ceylon.
<i>P. spongilla</i> Risbec, 1928	New Caledonia.
<i>P. striata</i> (Kelaart, 1858)	India and Japan.
<i>P. townsendi</i> Eliot, 1905	India.
<i>P. variolata</i> (Orbigny, 1837)	Central Chile.
See: <i>Anisodoris variolata</i> (Bergh, 1898)	
<i>P. variegata</i> Bergh, 1880	Tahiti.
NOMINA NUDA	
<i>P. brunnea</i> Bergh, 1877a	
<i>P. marmorata</i> Bergh, 1877b	

¹Although this is the type locality of *P. hepatica*, as given by Abraham (1877), we have been unable to locate such a locality from available gazetteers.

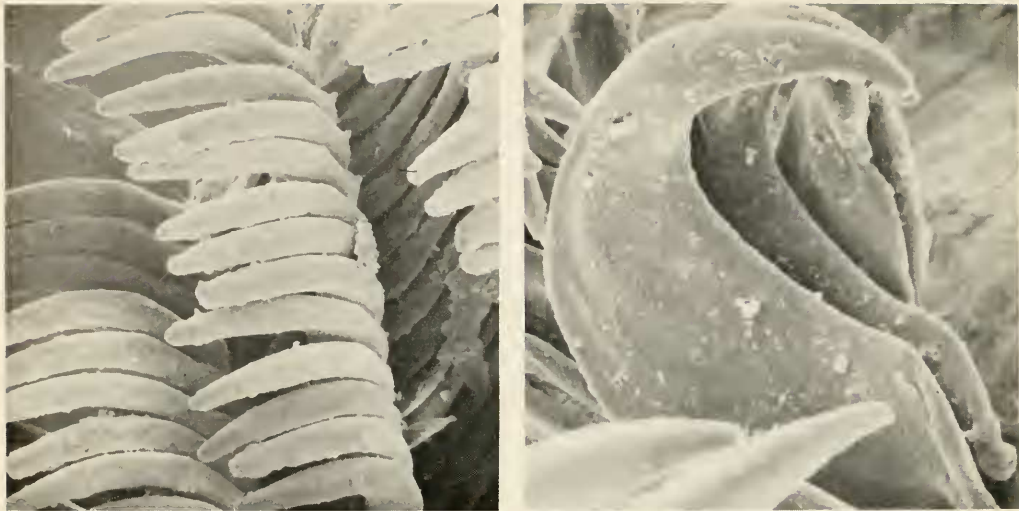


Figure 4. Scanning electron micrographs from a section of the radula at 3a. Left, X400; right, X900.

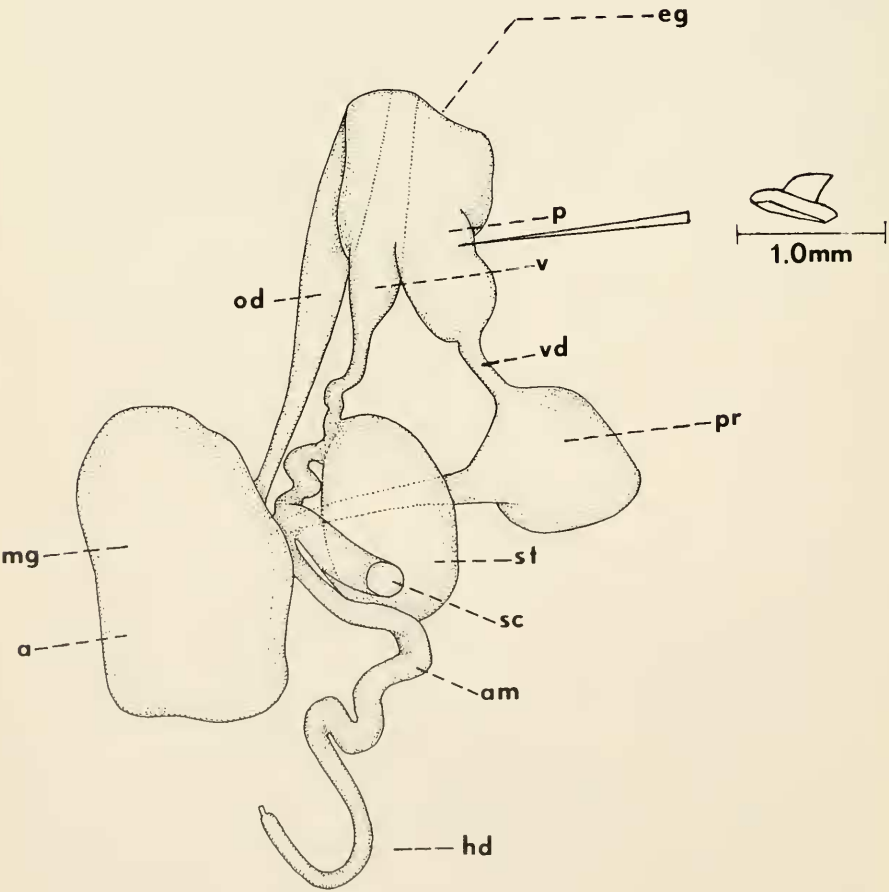


Figure 5. Camera-lucida drawing of reproductive organs with offset of a cirral hook, hd-hermaphrodite duct, sc-spermatocyst, st-spermatheca, pr-prostate, vd-vas deferens, v-vagina, p-penis, od-oviduct, mg-mucus gland, a-albumen gland, am-ampulla, eg-external genital opening.

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